

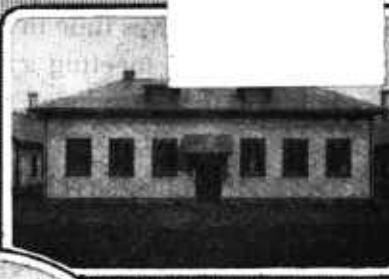
## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.

Rev. July 1928

# FARM DAIRY HOUSES

Rev. ed.  
follows



**A** GOOD MILK HOUSE of suitable design and construction is an important element of proper equipment for a dairy farm. It makes for convenience and saves time in the handling of milk and is a necessity in meeting sanitary requirements. Clean milk can be produced more easily and more satisfactorily with proper than with poor equipment.

Health officers recommend the use of properly designed and constructed milk houses, and sometimes provisions on this point are included in milk ordinances and regulations. Score cards for dairy farms also show that a properly built milk house is desirable.

Sometimes dairy farms are provided with milk houses that are not constructed in a way to make them most serviceable and sanitary. It is important to have the right kind of plan and construction. To meet the needs above mentioned the various plans presented in this bulletin are placed before the dairyman.

Washington, D. C.

Issued October, 1921  
Revised July, 1928

# FARM DAIRY HOUSES.

By ERNEST KELLY and K. E. PARKS, *Bureau of Dairy Industry.*

## CONTENTS.

	Page.		Page.
Necessity for a dairy house-----	3	Plans for milk houses of various sizes-----	5
Importance of well-chosen location--	3		
Construction of dairy houses-----	3		

## NECESSITY FOR A DAIRY HOUSE.

THE necessity for a milk room separate from the stable arises from the delicate nature of milk. Milk is easily contaminated by stable dirt and absorbs stable odors very readily. If contaminated it may become unhealthful for the consumer and may occasion losses to the producer through souring and the development of bad flavors. It should therefore be removed promptly to a clean, airy place, free from dust, insects, and objectionable odors.

## IMPORTANCE OF WELL-CHOSEN LOCATION.

The best results will be obtained if the milk room does not open directly into the stable. Stable air and stable dust should not have a chance to enter the place where milk is handled.

On the other hand, if the milk room is far removed from the stable it will take much additional labor to carry the milk from each cow directly to the milk house. Prompt removal is desirable so that the milk will not be subjected to stable contamination and will be cooled promptly.

If proper surroundings are maintained, it is not objectionable to build the milk house directly adjacent to the stable, but with an outside entrance. Of course the milk or dairy house should be located on a well-drained spot. No accumulations of manure, refuse, or other objectionable material should be allowed near the milk house. They give rise to undesirable odors and attract flies.

## CONSTRUCTION OF DAIRY HOUSES.

*Building material.*—A concrete or tile house with an asbestos-shingle or slate roof is fireproof, durable, and sanitary. While the initial cost of such a house is high, it is believed to be cheapest in the long run, for it requires few repairs, and no painting.

Other materials that may be used are brick, stone, cement block, and wood. The roof may be covered with slate, asbestos shingles,

tile, prepared roofing, wooden shingles, or metal. Any of these materials may be used in the following plans if due allowance is made for the thickness of walls of different materials. Outside walls should be of approximately the following thicknesses: Concrete, 6 to 8 inches; brick, 9 inches; tile, 8 inches; stone, 14 to 18 inches; cement block, 8 inches; and frame, 6 inches.

*Floors.*—Particular care should be used in constructing milk-house floors. Concrete is by far the best material for this purpose, as it resists moisture, decay, and wear. Concrete floors should be built of a base made up of 1 part cement, 3 parts sharp, clean sand, and 5 parts stone. This base should be about 5 inches thick and should be covered with a top coat 1 inch thick made by mixing 1 part cement and 2 parts sand. The top coat should be troweled hard and smooth. The whole floor should be pitched at least one-fourth inch to the foot to one or more large bell traps, so that it will drain thoroughly.

*Walls.*—Cement plaster (1 part cement to 3 parts sand) makes the best inside finish, and this can be applied directly to the walls if they are composed of stone, tile, concrete, brick, or cement blocks. Where the house is of frame, it is necessary to use expanded metal lath on which to plaster. Dressed tongue-and-groove lumber may be used for inside finish, but its life is not so long nor is it so sanitary. Such an interior should be kept thoroughly covered with a good white enamel paint.

Door knobs and other hardware should be of porcelain or china so far as possible. Such materials are cheap and will not be affected by moisture.

*Windows.*—All milk houses should have plenty of sunlight, well distributed. Window-glass surface equivalent to at least 10 per cent of the floor area is necessary. Thus a building 10 by 20 feet, for example, should have windows with a total glass area amounting to at least 20 square feet. It is better to have counterbalanced or sliding sash so that screens may be placed on the outside without interfering with the operation of the windows.

*Ventilation.*—Steam and water are apt to make the dairy house damp, which hastens deterioration, and favors the growth of mold and bacteria. Odors are also likely to arise from spilled milk. To keep the air dry and sweet, proper ventilation is necessary. In some climates ventilation can be obtained by openings, such as doors and windows, but in most localities some other method is necessary. Sometimes a ventilating flue is desirable, which should run from the ceiling out through the peak of the roof, the outer opening being shielded to keep out rain and snow.

All openings, such as doors, windows, and ventilators, should be thoroughly screened to prevent the entrance of flies and other in-

sects. Insects carry disease germs which may get directly into the milk or may be deposited on the clean cooler, strainer, and other utensils.

*Cleaning and sterilizing facilities.*—Milk houses should be supplied with an abundance of cold, running water for cooling milk. In addition there should be adequate facilities for hot water and steam, for without these, utensils can not be properly washed and sterilized. Directions for constructing cooling tanks and for cooling milk and cream may be found in Farmers' Bulletin 976.

*Drainage.*—Every milk house should be provided with a proper means of waste disposal. More or less milk is spilled on the floors or washed off of utensils. Milky water swept out of the milk-house door attracts flies and gives rise to disagreeable odors. The floor should be drained through bell traps into a drain of 6-inch glazed tile. Four-inch tile is sometimes used, but this is apt to become clogged. The drain should be laid 2 feet deep, and should have a fall of at least 1 foot to every 60 feet in length. A rapid fall tends to prevent clogging. Drainage should be carried well away from the milk house. Persons contemplating the construction of dairy houses, and especially waste-disposal systems, should apply to their local and State health departments for copies of regulations on sanitary requirements. These requirements vary somewhat in different States.

#### PLANS FOR MILK HOUSES.

The accompanying illustrations give general plans of dairy houses for handling the milk of herds of different sizes, and where the product is to be handled in different ways.

Complete blue prints for the construction of any dairy house shown may be obtained from the Division of Agricultural Engineering, Bureau of Public Roads, U. S. Department of Agriculture, Washington, D. C. In requesting plans of any of these buildings, refer to the design number, not the figure number.

For information regarding plans to fit particular conditions, also bills of material required for construction and other information, apply to the Bureau of Dairy Industry, U. S. Department of Agriculture.

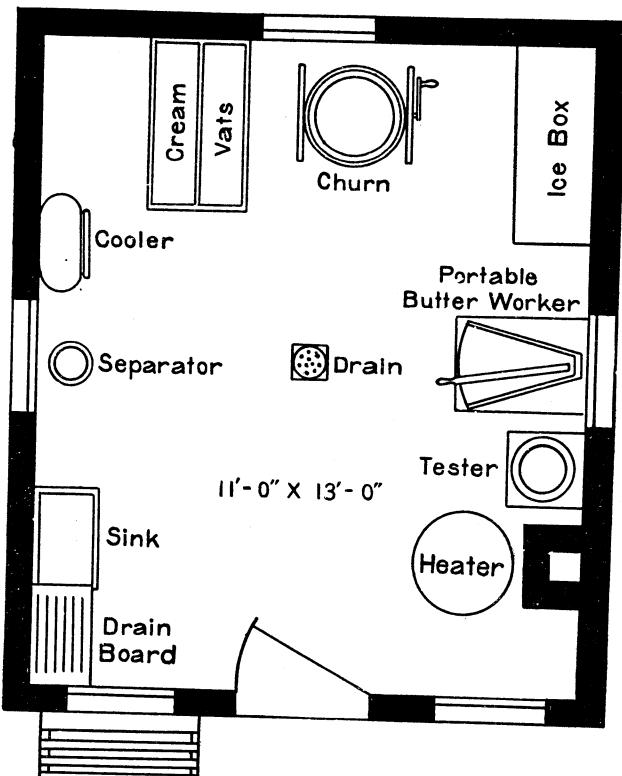
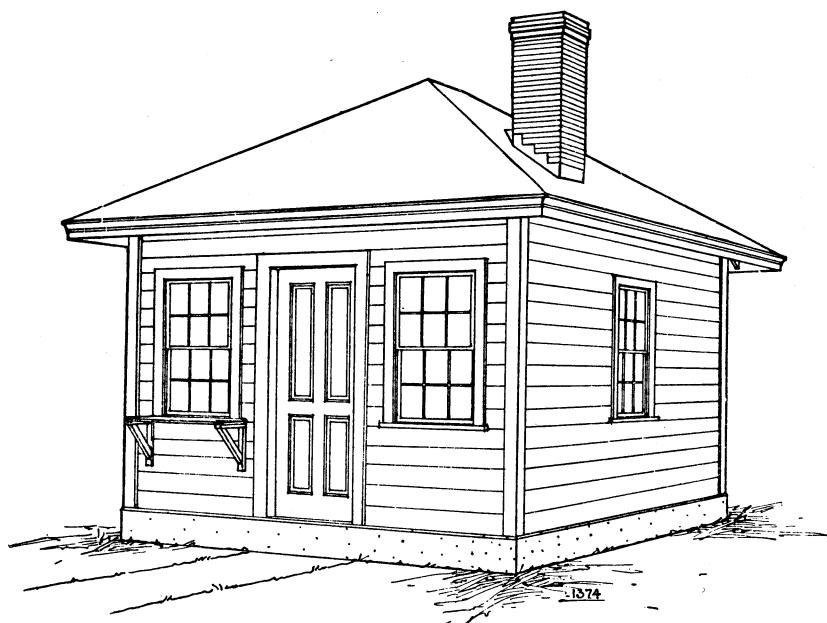


FIG. 1.—A plan suitable for a farm with a herd of from 25 to 30 cows, and arranged for hand-power buttermaking equipment. The building has one room which contains all necessary buttermaking apparatus, also a hot water heater, wash sink, and drying rack for the care of pails, strainers, separator parts, etc. Design No. 1341.

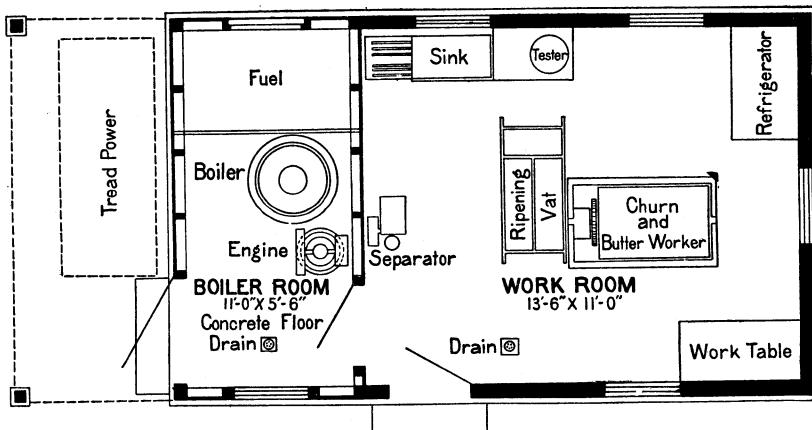
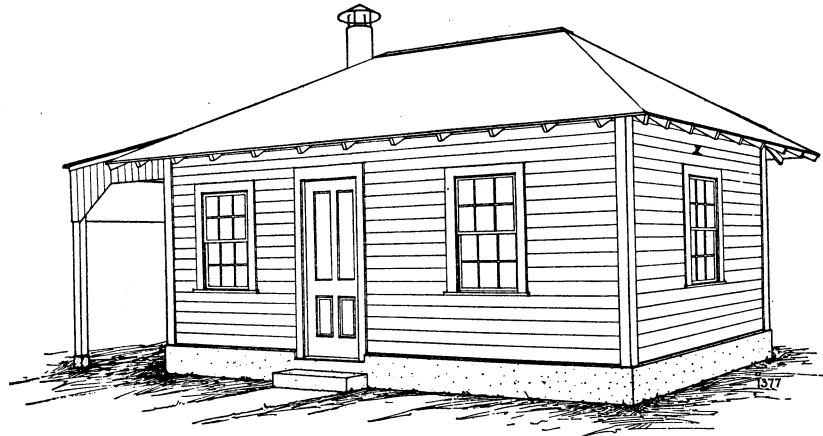


FIG. 2.—For buttermaking on farms where equipment is operated by power. The plan shows a boiler and steam engine; but power can be supplied by a gas engine or tread power, and the dotted lines indicate a shed addition that can be added if a tread power is used. Where a steam engine is not installed, a small boiler will be required to furnish the necessary steam for heating water and sterilizing utensils and apparatus. Design No. 1337.

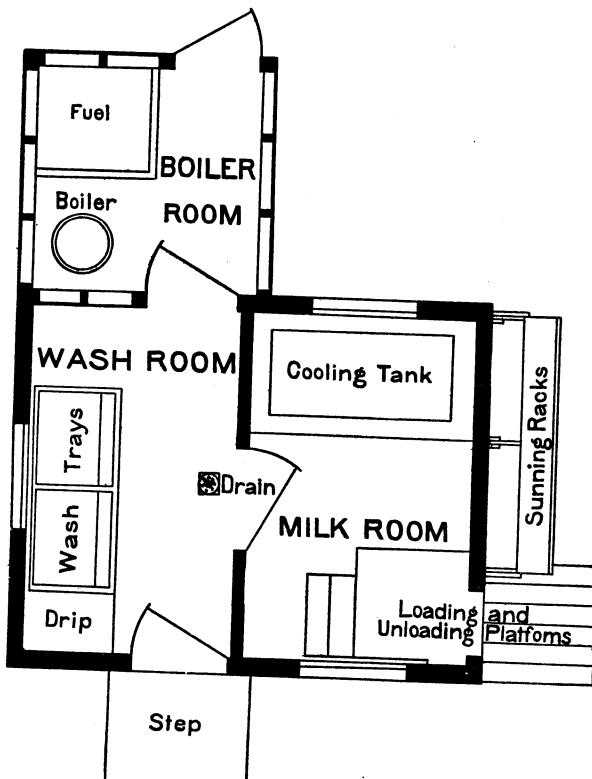
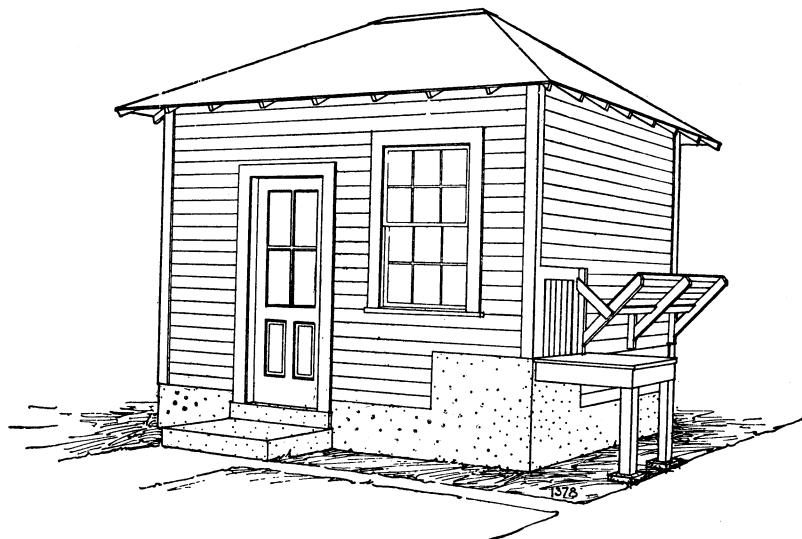


FIG. 3.—Small dairies, of from 10 to 20 cows, where milk is shipped in cans, may use this little house, which consists of 2 rooms and a shed addition to house the boiler. The floor area of the milk house proper is 9 by 12 feet. Design No. 909.

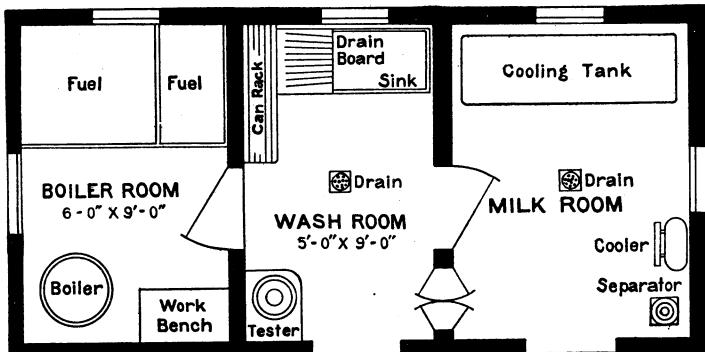
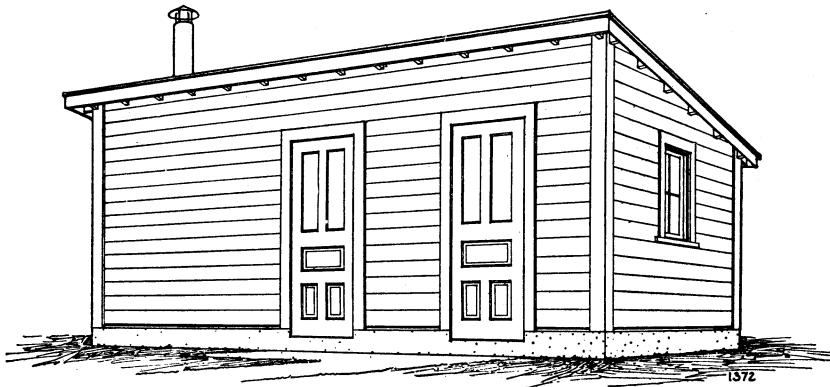


FIG. 4.—Perhaps the best all-round milk house for dairies shipping milk or cream in cans. It is small, conveniently arranged, and relatively inexpensive. The little closet between the milk and wash rooms is to hold sample bottles and glassware for the Babcock test. The storage tank is sunk below the floor level, to minimize the lifting of cans of milk. Adapted to dairies of from 10 to 30 cows. Design No. 1336.

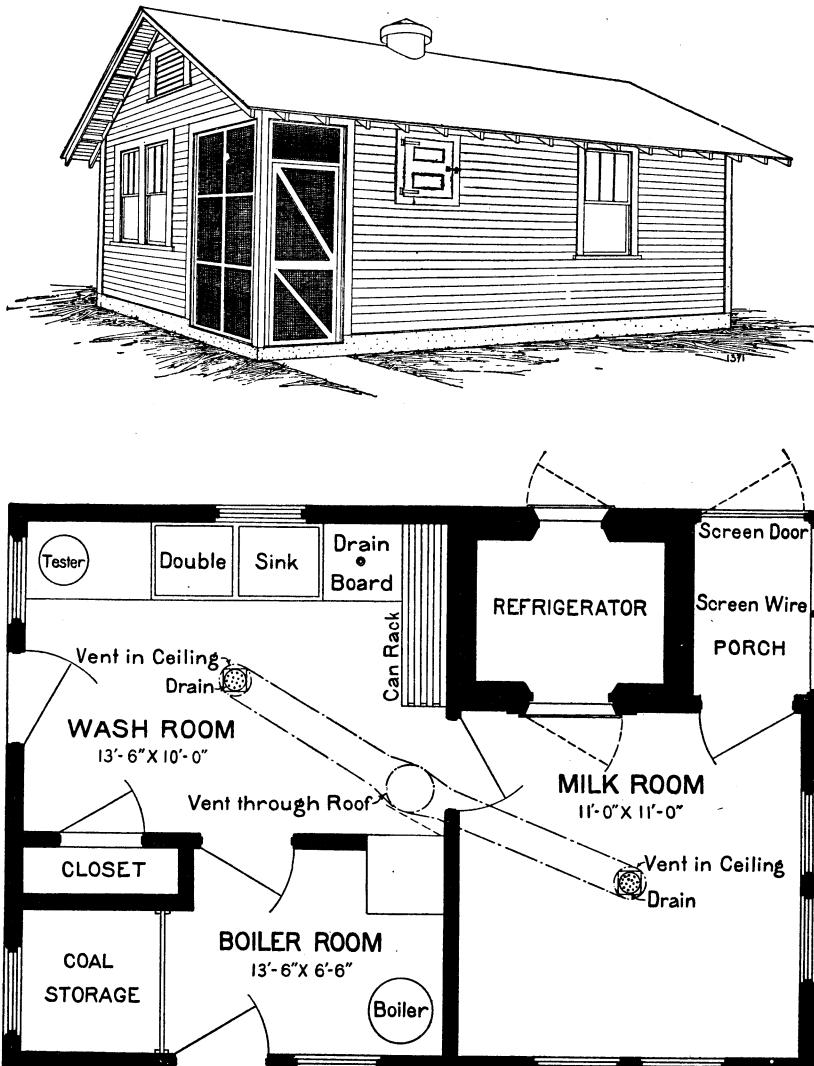


FIG. 5.—An arrangement for a 20 to 40 cow dairy where the milk is bottled. The building is 18 by 26 feet and contains 3 rooms besides a cold-storage room or refrigerator. Design No. 633. Perspective view shows rear and right side of plan.

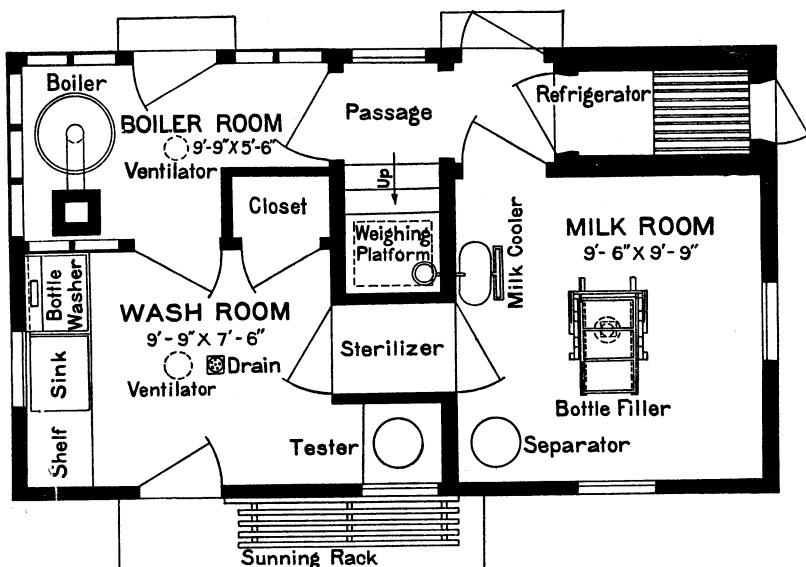
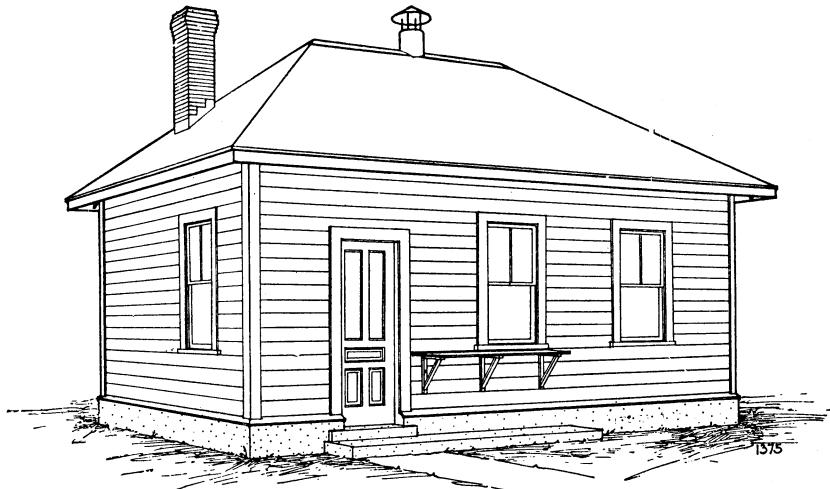


FIG. 6.—A building which, though only 14 by 24 feet, is fully equipped for handling a bottled-milk business with from 25 to 50 cows. There is full provision for separating and bottling. Facilities are provided for washing all utensils, including bottles, and sterilizing them in a steam sterilizer. Milk is brought direct from the barn and poured into an elevated hopper, from which it runs over the cooler. Design No. 1333.

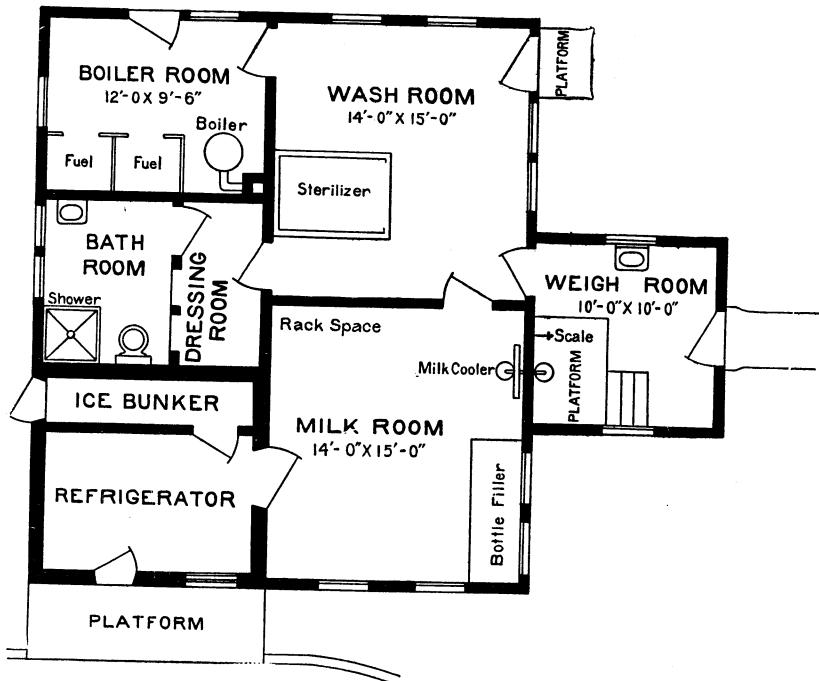
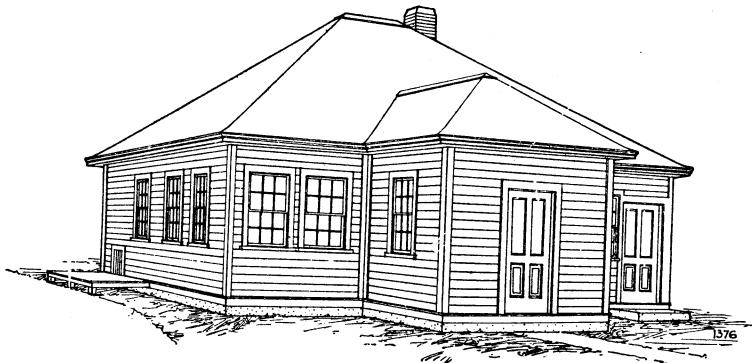


FIG. 7.—A plan designed for those farms producing certified milk or a special grade of milk from 40 to 100 cows. Besides the usual facilities for bottling milk and cleansing utensils, it contains a dressing room and shower for the milkers, and a lavatory in the weigh room where a milker can wash his hands after milking each cow. Design No. 1339.

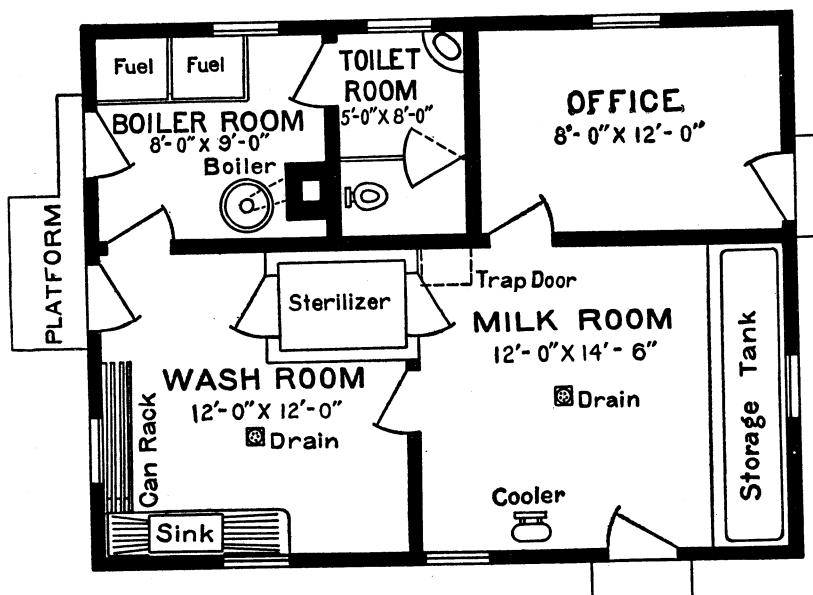
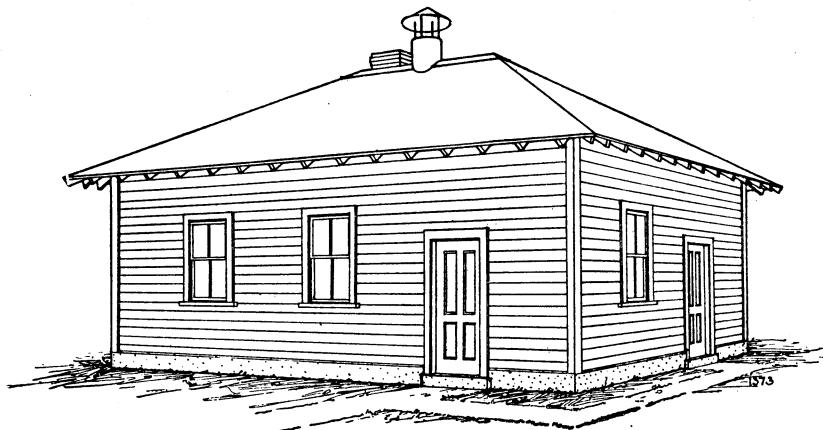


FIG. 8.—Sometimes a milk producer is in town, where he bottles and retails milk from his dairy. Sometimes he buys milk from one or two other dairymen. Usually some milk is sold on the premises, and it is customary to make two deliveries daily. The building shown in this plan is suitable for such conditions. It provides an office and salesroom, besides the other necessary rooms. There is a tank for the cold storage of milk in cans until it is bottled and delivered. Design No. 1342.

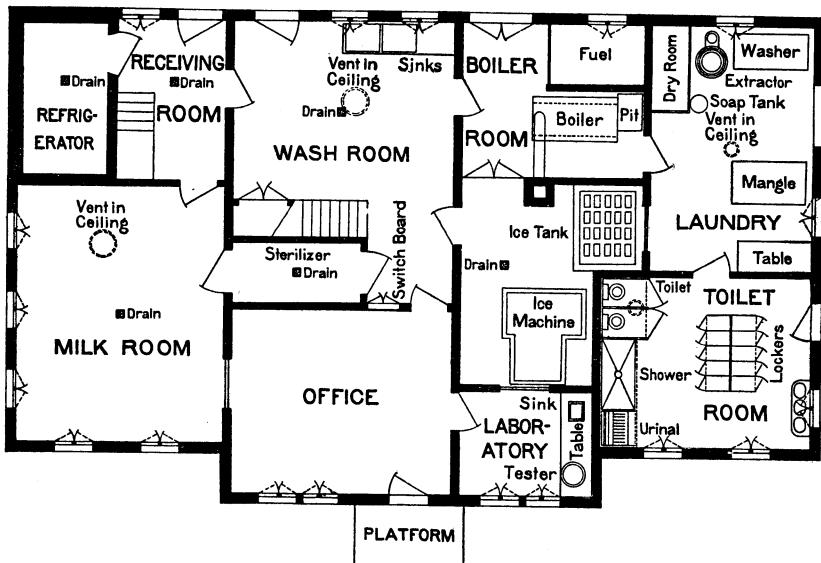


FIG. 9.—A plan suitable for large dairies of several hundred cows, where milk of high quality is produced. It is adapted to large certified dairies, hospitals, educational institutions, and similar establishments. Artificial refrigeration is provided, together with tanks for making ice. The building contains a laboratory and a laundry for washing suits worn by the milkers and milk-house employees. Design No. 1345.

ORGANIZATION OF THE  
UNITED STATES DEPARTMENT OF AGRICULTURE

July 3, 1929

---

<i>Secretary of Agriculture</i> -----	<b>ARTHUR M. HYDE.</b>
<i>Assistant Secretary</i> -----	<b>R. W. DUNLAP.</b>
<i>Director of Scientific Work</i> -----	<b>A. F. WOODS.</b>
<i>Director of Regulatory Work</i> -----	<b>WALTER G. CAMPBELL.</b>
<i>Director of Extension Work</i> -----	<b>C. W. WARBURTON.</b>
<i>Director of Personnel and Business Adminis- tration.</i> -----	<b>W. W. STOCKBERGER.</b>
<i>Director of Information</i> -----	<b>M. S. EISENHOWER.</b>
<i>Solicitor</i> -----	<b>R. W. WILLIAMS.</b>
<i>Weather Bureau</i> -----	<b>CHARLES F. MARVIN, <i>Chief.</i></b>
<i>Bureau of Animal Industry</i> -----	<b>JOHN R. MOHLER, <i>Chief.</i></b>
<i>Bureau of Dairy Industry</i> -----	<b>O. E. REED, <i>Chief.</i></b>
<i>Bureau of Plant Industry</i> -----	<b>WILLIAM A. TAYLOR, <i>Chief.</i></b>
<i>Forest Service</i> -----	<b>R. Y. STUART, <i>Chief.</i></b>
<i>Bureau of Chemistry and Soils</i> -----	<b>H. G. KNIGHT, <i>Chief.</i></b>
<i>Bureau of Entomology</i> -----	<b>C. L. MARLATT, <i>Chief.</i></b>
<i>Bureau of Biological Survey</i> -----	<b>PAUL G. REDINGTON, <i>Chief.</i></b>
<i>Bureau of Public Roads</i> -----	<b>THOMAS H. MACDONALD, <i>Chief.</i></b>
<i>Bureau of Agricultural Economics</i> -----	<b>NILS A. OLSEN, <i>Chief.</i></b>
<i>Bureau of Home Economics</i> -----	<b>LOUISE STANLEY, <i>Chief.</i></b>
<i>Plant Quarantine and Control Administration</i> -----	<b>C. L. MARLATT, <i>Chief.</i></b>
<i>Grain Futures Administration</i> -----	<b>J. W. T. DUVEL, <i>Chief.</i></b>
<i>Food, Drug, and Insecticide Administration</i> -----	<b>WALTER G. CAMPBELL, <i>Director of Regulatory Work, in Charge.</i></b>
<i>Office of Experiment Stations</i> -----	<b>E. W. ALLEN, <i>Chief.</i></b>
<i>Office of Cooperative Extension Work</i> -----	<b>C. B. SMITH, <i>Chief.</i></b>
<i>Library</i> -----	<b>CLARIBEL R. BARNETT, <i>Librarian.</i></b>

---

This bulletin is a contribution from  
*Bureau of Dairy Industry*----- **O. E. REED, *Chief.***